

# Design & Development of Automated & Customized Gomay Soap Machine For Vatsalya Unique Products pvt. Ltd.

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## ABSTRACT:

In today's scenario in every industries automation is required to increase the productivity, but the small scale industries does not afford the costly automation system for their industry. So this paper based on the cost effective customized automation for small scale industry.

In this paper the working model of customized soap machine introduced. this model is work on both the electric supply and battery also. The mixture of material is use for soap is purely natural and it supply to the machine by hopper and passes through the extruder and get converted in the final circular shape soap with the help of circular shape die.

*KEY WORDS: Extruder, Circular Die, Chain drive, Hopper etc.*

## 1. REVIEW & LITERATURE SURVEY

### Review of System:

When we start working on this project we studied various Mechanically operated Automation system. Then we came across the various mechanical components like Main base, Extruder, Hopper, Bearings, chain drive, Motors , cutting device , etc. While designing this model we face various difficulties like the problem for cutting and shrinkage after drying.

### Literature Survey:

For effective Manufacturing there is a need of developing new concept or new method of production. So that we have to develop automated system for the manufacturing. The model which we introduced is the small & combined version of automation used in big industries. There are so many soap making machines available in market for soap manufacturing, but all this are work on chemically bonded material or wax & fatty acid based materials. But the soap for which we are introducing this model is purely natural and its main ingredients are cow-dung, turmeric, sandalwood, sesame oil, Sinoper etc. for that soap any automated machine is not available for small scale industries , so that we are made such type of model.

## 2. INTRODUCTION

Now days there is a lot of competition in small scale industries over the big manufacturing industries to develop quality product with the high production rate. A low cost automation is need of time for purpose of development of cottage level industries. Its necessary to reduce the machining time. Soap is commonly used as a cleaning agent and it remain an essential ingredient in modern living, it used daily for personal hygiene. The mission of this project is to design a cheap and affordable automatic soap making machine for small scale industry which makes the soap by cow dung material with the help of extrusion process.

After completion of this project we hope that the machine will be used in the industry for making the soap to increase the production rate and minimize the damaged product due to labor mishandling. this machine assemble domestically in simple way so it's price reduced drastically that is why it is economically stable for the small scale industries.

Initially after reading the research paper and by seen other previous process we plan to make a soap making machine for cow dung which is easy to use and cost-effective. The objective of this project to reduce the time and hard work of labor and increase the productivity and production rate.

### 3. CONSTRUCTION

There are different parts are used in the customized soap making machine / system:-

- 1) Main base
- 2) Dc motors
- 3) Extruder
- 4) Bearings
- 5) Chain drive
- 6) Cutting blade
- 7) Gears
- 8) Hopper
- 9) Metal shaft
- 10) Circular die

The whole assembly of this setup is mounted on the main base. The base size is 650\*320 mm, the extruder is placed at 230 mm above the base. It's blade thickness is 14 gauge and 100 mm length. Extruder blade is mounted on the shaft at one end and at other end there is a big gear attached. The extruder shaft is rotate in two ball bearing with the help of DC motor with the help of chain drive. Chain drive connect the heavy duty DC motor and big gear. Hopper is placed above the extruder to provide semisolid soap material.

The another motor is placed at in front of the extruder to cut the output soap bar in circular shape with cutting blade. The cutting blade is attached with gear and rotate in with specific rpm.

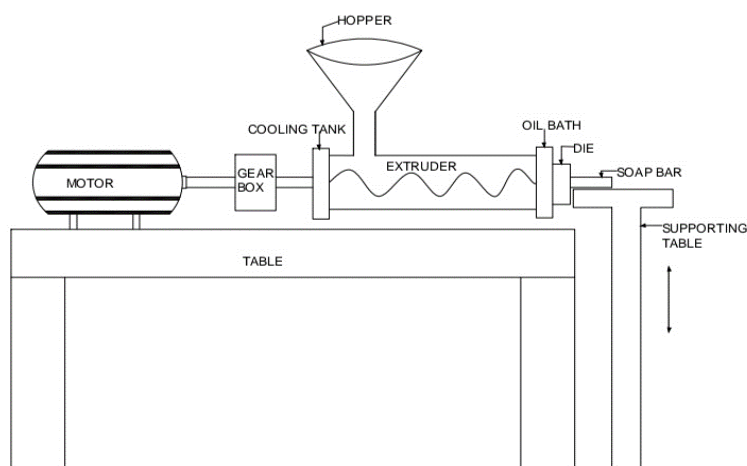


Fig :- Customized Soap Machine

## 4. WORKING

The cow dung soap making machine is works with the help of DC motor which work on battery or electric power supply. When the motor is start it provides power to the smaller gear and it transfer by chain drive to the another big gear connected with extruder shaft. These shaft help to rotate extruder in the circular chamber. These gears works as a speed reduction unit. The material of cow dung soap is feed from the top of the hopper. due to the wet material there is spring connected to press handle. due to applying the press handle the material is forcefully feed in the extruder chamber . the rotation of extruder blades soap material get push forward to the narrow circular opening . due to continuous rotation of extruder and supply of material the compact bar of soap comes out from the opening at the end of the chamber . there is a motor provides power to the gear on which sharp cutting blade is fixed which rotate continuously at particular time interval to cut the soap in the particular size. there is gear arrangement to reduce the speed of the motor and reduction ratio is 6:1 also the cutter is cut the bar in a specific length. After cutting the soap bar these pieces of soap is collected at the well placed housing which made to collect the soap bars.

## 5. CONCLUSION

- ❑ As per the previous research work it is observed that the machine for manufacturing the bath soap from cow dung is not available.
- ❑ The machines are available to manufacture a soap from other constituents but natural cow dung soap making automatic machine is not done.
- ❑ Thus based on the literature review Automatic conveying , punching soap making machine be designed, developed and tested under optimum conditions.

## 6. REFERANCES

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